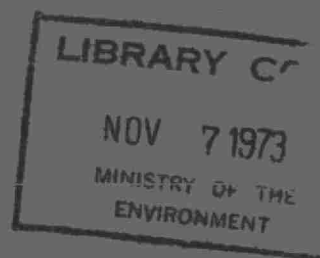


OPERATING SUMMARY

TRENTON



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Ontario

Ministry of the
Environment

135 St. Clair Avenue West

Toronto 195, Ontario

We are pleased to present you with the 1972 operating summary for the water pollution control plant serving your community.

This summary contains data on the performance of the plant as well as relevant financial information. Of particular interest is the review of the year's activities in which significant items of these data are discussed in some detail by the operations engineer and his staff who, by their day-to-day involvement with the operation, are thoroughly familiar with the plant.

We appreciate your continuing interest in protecting the environment through the efficient operation of this wastewater treatment facility.

D.S. Caverly,
Assistant Deputy Minister.

D.A. McTavish, P. Eng.,
Director,
Project Operations Branch.

MINISTRY OF THE ENVIRONMENT

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Honourable James A. C. Auld

DEPUTY MINISTER
E. Biggs

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ACTING REGIONAL SUPERVISOR
B. W. Hansler

OPERATIONS ENGINEER
J. Dick

135 St. Clair Avenue West
Toronto 195

TRENTON
WATER POLLUTION CONTROL PLANT

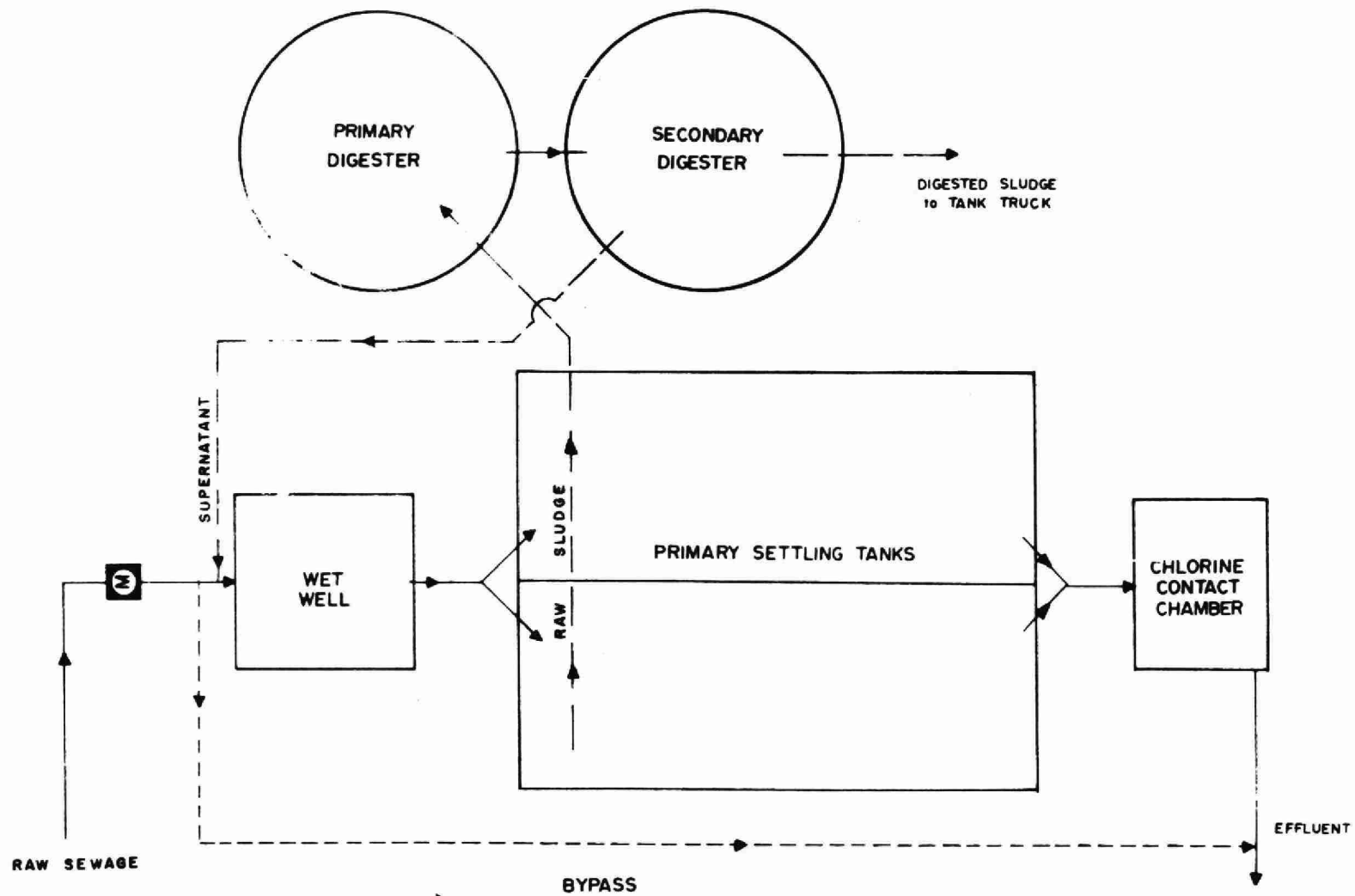
operated for
THE TOWN OF TRENTON
by the
MINISTRY OF THE ENVIRONMENT

1972 ANNUAL OPERATING SUMMARY

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TRENTON WATER POLLUTION CONTROL PLANT



DESIGN DATA

PROJECT NO. 2-0004-57

TREATMENT Primary

DESIGN FLOW 1.0 mgd

DESIGN POPULATION 12,000

BOD - Raw Sewage 250 mg/l
- Removal 35%

SS - Raw Sewage 200 mg/l
- Removal 55%

PRIMARY TREATMENT

Grit Removal

Type: Aerated, with air lift
Size: One 10' x 9' x 8½' (4,775 gal)
Retention: 1.5 min

Primary Sedimentation

Type: Jeffrey
Size: Two 52' x 16' x 12' (125,000 gal)
Retention: 3.0 hr
Loading: Surface, 600 gal/ft²/day
Weir, 8340 gal/ft/day

Air Supply

Two Roots-Connorsville

CHLORINATION

Type: F & P

Chlorine Contact Chamber

- not provided; chlorination in outfall

OUTFALL

- 850 ft of 30" concrete pipe to Bay of Quinte

SLUDGE HANDLING

Digestion System - Two-stage

Primary --

Type: Gas mixed, fixed cover; PFT
Size: One 28' dia x 23' (13,500 cu ft or 84,000 gal)
Loading: 2.62 lb/cu ft/mo

Secondary --

Type: Fixed cover
Size: One 28' dia x 23' (13,500 cu ft or 84,000 gal)
Total Loading: 1.31 lb/cu ft/mo

PUMPING STATIONS

Dundas Street Pumping Station

Type: Fairbanks-Morse
Size: One 700 gpm @ 39' tdh
One 1740 gpm @ 48' tdh
One 3130 gpm @ 68' tdh (diesel)

'72 Review

GENERAL

On June 1, 1972, the Ministry of the Environment commenced the integrated operation of Trenton/Batawa/Frankford. It was the intent that this operation would create more flexibility with less overtime and more free week-ends for plant operators. This aspect of the operation worked very satisfactorily for the first 6 months of operation in 1972. An additional operator, Mr. Garry Schweiger was hired in 1972.

In September of 1972, it was observed that the two digesters in the Town of Trenton water pollution control plant were not operating properly with resultant odours and foaming. The process was immediately tested and the test indicated that the digester was not performing properly. It was therefore decided that the raw sludge would have to be disposed of until such time that the operation of the two digesters again became normal. It was approximately three months that raw sludge was hauled by truck. The first month the total raw sludge was disposed of from the plant followed by a gradual feeding of the raw sludge into the digesters again. This naturally created a considerable increase in the cost of the operation.

A new feature that was adopted at the Trenton sewage plant and pumping station was the installation of a new alarm system. The alarm system when activated by a high water level or a power failure relay will telephone the various operators to indicate this malfunction to them.

The Dundas Street pumping station was completely painted during the year. The old lights were also replaced with new ones.

Because of the very greatly deteriorated condition of the windows at the treatment plant, all windows were replaced to eliminate rain and winter cold from entering the plant building.

The major mechanical problems that were corrected were the overhaul of the sewage gas compressor and motors the overhaul of the #1 sewage lift pump and motor, a complete overhaul of the sewage effluent pump and a complete overhaul of the sludge recirculating pump.

The Research Branch of the Ministry of the Environment also installed a flow measuring device on the Dundas Street pumping station overflow chamber.

EXPENDITURES

The total operating expenditures for the plant and associated pumping stations was \$42,135.00. The cost of treating one million gallons of sewage was \$48.79 or approximately 8.4 cents per pound of BOD removed.

PLANT FLOWS AND CHLORINATION

A total of 1006.9 million gallons of sewage was treated in 1972. The average daily flow of 2.75 mgd exceeded the design capacity of the plant 100 percent of the time. The overload condition was due to increased development and a general increase in the serviced area contributing to the treatment facilities. The pumping stations and treatment plant facilities were all severely overloaded during rain storms and spring runoff periods.

Chlorination of the final effluent is practiced on a year round basis. The total amount of chlorine used to disinfect the effluent was 21,700 pounds.

PLANT EFFICIENCY

The average concentrations of BOD and suspended solids in the plant influent were 251 and 213 mg/l respectively. The average concentrations of BOD and suspended solids in the plant effluent were 195 and 127 mg/l respectively. This represented a reduction in BOD and suspended solids of 22 and 40 percent respectively. This degree of treatment was unsatisfactory. The cause of the poor treatment was the overloaded condition of the plant.

SLUDGE DIGESTION AND DISPOSAL

A total of 1, 954, 000 gallons of sludge were pumped to the two digesters.

A total of 1075 cubic yards of sludge were hauled away from the plant site. Of this amount, 486 cubic yards were digested sludge and 589 cubic yards were raw sludge. As has already been mentioned, the raw sludge was disposed of by tank truck due to the digestion system.

CONCLUSIONS

The sewage treatment and Dundas Street pumping station were in desperate need of enlargement. It is expected that the final design for the expansion of the facilities will be completed in 1973.

PROJECT COSTS

2-0004-57
NET CAPITAL COST \$515,665.11

DEDUCT - Portion financed by

Long Term Debt to MOE \$515,665.11

Debt Retirement Balance at Credit
(Sinking Fund) December 31, 1972 \$188,464.04

Net Operating \$ 49,135.00
Debt Retirement 3,840.00
Reserve -
Interest Charged 28,917.96

TOTAL \$ 81,892.96

RESERVE ACCOUNT

Balance @ January 1, 1972 \$ 37,612.42

Deposited by Municipality -

Interest Earned 2,349.76

\$ 39,962.18

Less Expenditures 4,312.00

Balance @ December 31, 1972 \$ 35,650.18

PROJECT COSTS

2-0272-69	
NET CAPITAL COST	\$122,058.94
DEDUCT - Portion financed by CMHC (Final)	<u>(53,140.95)</u>
Long Term Debt to MOE	\$ <u>68,917.99</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1972	\$ <u>435.07</u>
Net Operating	\$ -
Debt Retirement	424.00
Reserve	553.00
Interest Charged	<u>8,288.89</u>
TOTAL	\$ <u>9,265.89</u>

RESERVE ACCOUNT

Balance @ January 1, 1972	\$ -
Deposited by Municipality	553.00
Interest Earned	<u>13.63</u>
	\$ 566.63
Less Expenditures	<u>-</u>
Balance @ December 31, 1972	\$ <u>566.63</u>

PROJECT COSTS

2-0095-61 NET CAPITAL COST	\$191,666.59
DEDUCT - Portion financed by CMHC (Final)	<u>(133,905.12)</u>
Long Term Debt to MOE	\$ <u>57,761.47</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1972	\$ <u>15,113.19</u>
Net Operating	\$ -
Debt Retirement	578.00
Reserve	-
Interest Charged	<u>3,239.20</u>
TOTAL	\$ <u>3,817.20</u>

RESERVE ACCOUNT

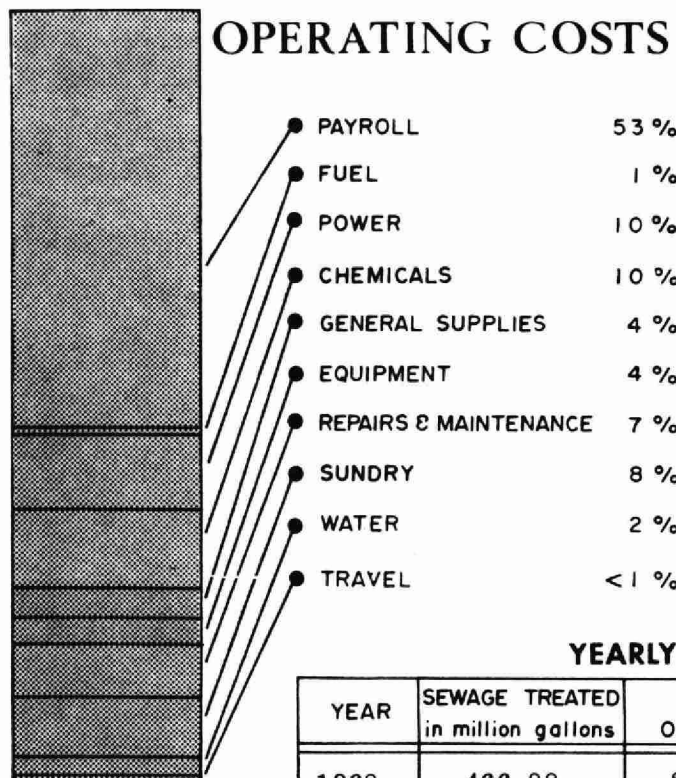
Balance @ January 1, 1972	\$ 12,595.84
Deposited by Municipality	-
Interest Earned	<u>826.06</u>
	\$ 13,421.90
Less Expenditures	<u>-</u>
Balance @ December 31, 1972	\$ <u>13,421.90</u>

PROJECT COSTS

2-0225-67	
NET CAPITAL COST	\$374, 507. 66
DEDUCT - Portion financed by CMHC (Final)	<u>(211, 190. 80)</u>
Long Term Debt to MOE	<u>\$163, 316. 86</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1972	\$ <u>11, 029. 20</u>
Net Operating	\$ -
Debt Retirement	2, 249. 00
Reserve	1, 662. 61
Interest Charged	<u>12, 544. 53</u>
TOTAL	\$ <u>16, 456. 14</u>

RESERVE ACCOUNT

Balance @ January 1, 1972	\$ 5, 163. 61
Deposited by Municipality	1, 662. 61
Interest Earned	<u>373. 60</u>
	\$ 7, 199. 82
Less Expenditures	<u>-</u>
Balance @ December 31, 1972	\$ <u>7, 199. 82</u>



1972 COSTS

TOTAL ANNUAL COST

NET OPERATING	44 %
DEBT RETIREMENT	6 %
RESERVE	2 %
INTEREST	48 %

YEARLY OPERATING COSTS

YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	TREATMENT COSTS	
			\$ per million gal	¢ per lb BOD
1968	466.88	26,431.57	56.61	4 cents
1969	401.70	28,799.25	36.84	5 cents
1970	606.9 (est)	40,728.10	66.00	8 cents
1971	780 (est)	41,694.83	53.45	5 cents
1972	1005.1	49,135.00	48.90	9 cents

MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	REGULAR PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY*	WATER	TRAVEL
JAN	2147.23	1645.75		71.04			97.61		298.73	34.10		
FEB	5253.63	1760.59		75.33	517.32	568.50	504.35	931.88	810.75	36.80	48.11	
MAR	3142.21	1529.07		133.11	558.32		250.55	193.73	271.73	148.11	57.59	
APR	2854.40	1877.09		98.65	504.62		185.07		12.40	115.20	41.27	20.10
MAY	3384.52	1816.00		66.97	544.37	568.50	135.89		159.54	34.32	58.93	
JUNE	4763.69	3346.19		44.53	495.30	435.00	141.81		174.34	86.41	40.11	
JULY	3282.95	73.60		17.58	405.62	1568.50	87.39	406.36	615.90	35.31	72.69	
AUG	3547.94	2260.06		7.48	374.79		46.68	103.95	367.39	212.01	175.58	
SEPT	4632.74	2906.23	228.75	40.68	370.31	420.00	65.51	156.19	59.48	202.27	183.32	
OCT	3735.70	3455.26	18.36	37.82			114.75		30.58	78.93		
NOV	2043.53	(948.78)		24.84	808.56	420.00	74.14		368.56	1118.64	177.57	
DEC	10346.46	5636.57	231.34	33.75	516.06	1153.17	309.02	196.03	205.18	1951.31	81.28	32.75
TOTAL	49135.00	25357.63	478.45	651.78	5095.27	5133.67	2012.77	1988.14	3374.58	4053.41	936.45	52.85

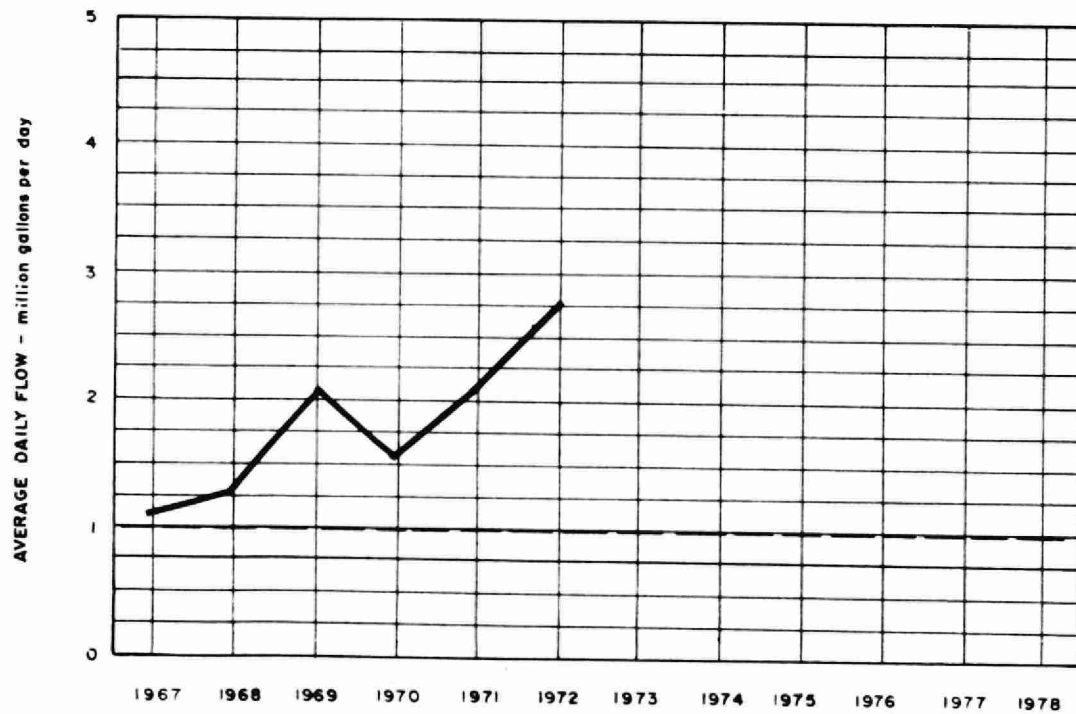
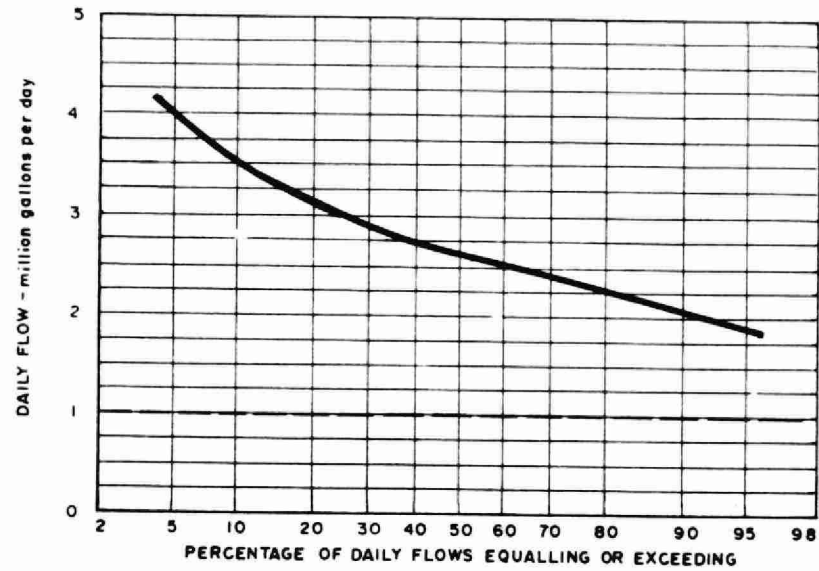
Brackets indicate credit.

* Sundry includes sludge haulage costs of \$1,098.30



PROCESS DATA

FLOWS

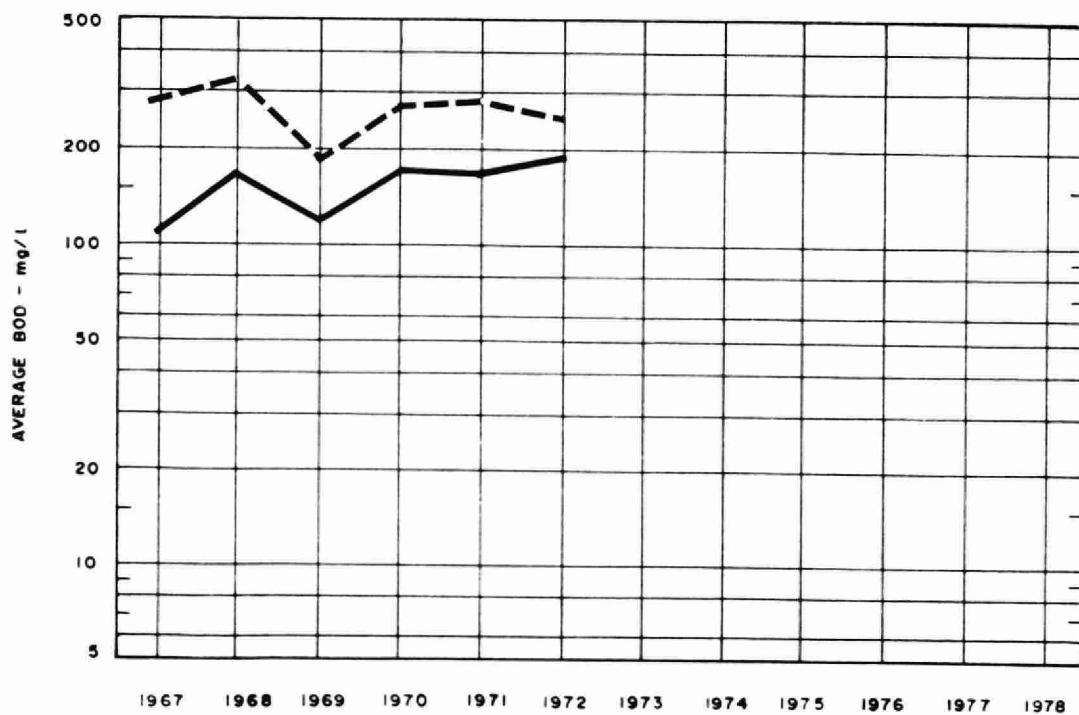
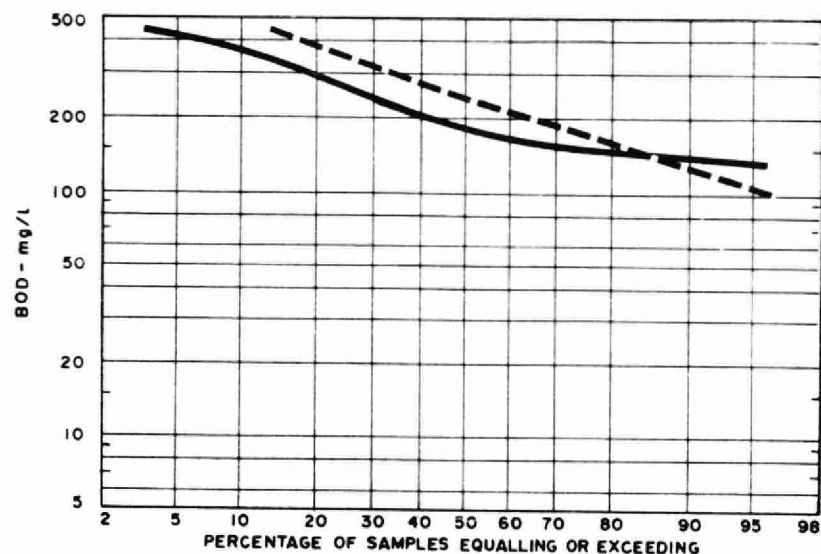


DESIGN CAPACITY — — — — —

PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10 ³ pounds	mg/l	mg/l	%	10 ³ pounds	mg/l P	mg/l P
JAN	78.1	2.52	3.4	270	180	33	70	175	115	34	47	9.9	6.1
FEB	75.2	2.59	3.5	300	240	20	45	355	185	48	128	7.3	6.7
MAR	94.9	3.06	4.4	170	89	48	77	185	138	25	45	7.2	6.8
APR	112.6	3.75	4.8	110	140	0	0	120	100	17	23	4.6	5.2
MAY	88.2	2.84	3.9	445	370	17	66	370	190	49	159	18.6	10.7
JUNE	79.1	2.64	3.9	400	320	20	63	290	145	50	115	7.9	7.1
JULY	72.4	2.33	3.1	233	135	42	71	120	85	29	25	6.2	5.5
AUG	72.5	2.34	3.4	251	210	16	30	200	115	43	62	8.5	7.4
SEPT	60.2	2.01	3.1	250	185	26	39	190	113	41	46	6.8	5.8
OCT	81.4	2.62	3.7	200	175	13	20	145	105	28	33	6.2	6.0
NOV	94.9	3.16	4.8	185	160	14	24	175	110	37	62	7.4	7.0
DEC	97.4	3.14	4.3	170	112	34	56	180	115	36	63	5.3	4.4
TOTAL	1006.9	-	-	-	-	-	561	-	-	-	808	-	-
AVG.		2.75	MAXIMUM 4.8	251	195	22	47	213	127	40	67	8.1	6.6
No. of Samples	-	-	-	35	23	-	-	23	23	-	-	23	23

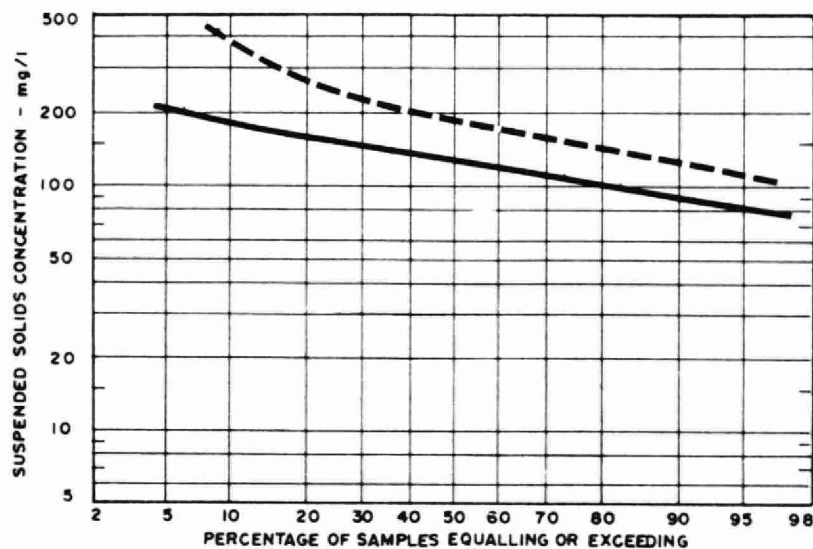
BIOCHEMICAL OXYGEN DEMAND



PLANT INFLUENT - - - - -

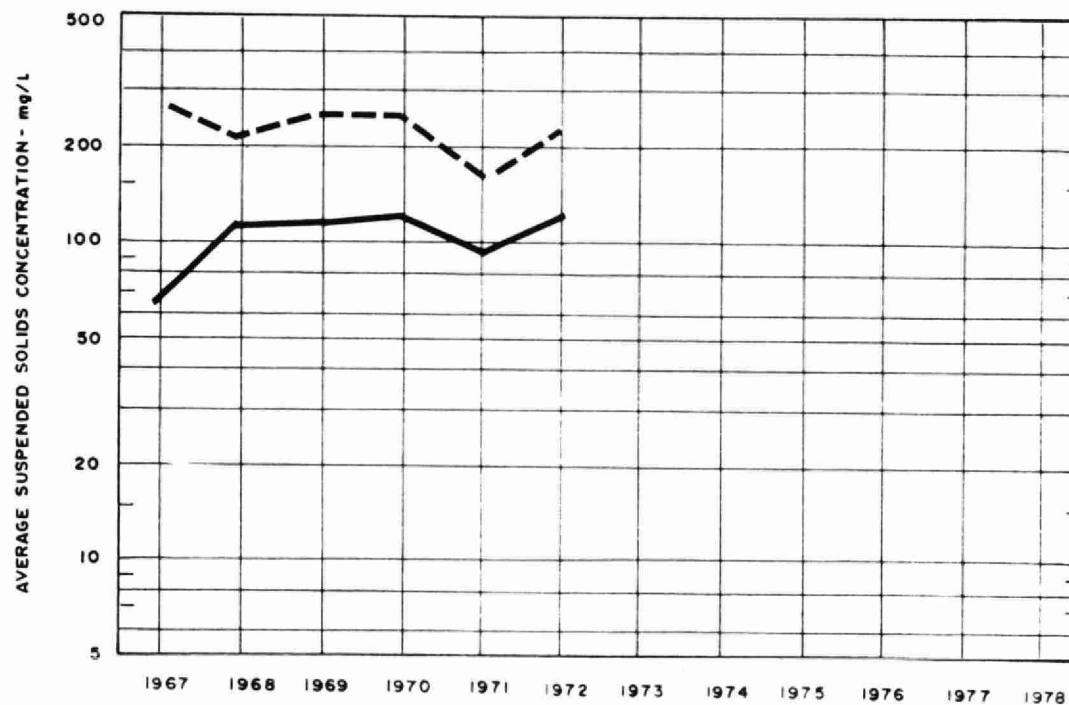
PLANT EFFLUENT —————

SUSPENDED SOLIDS

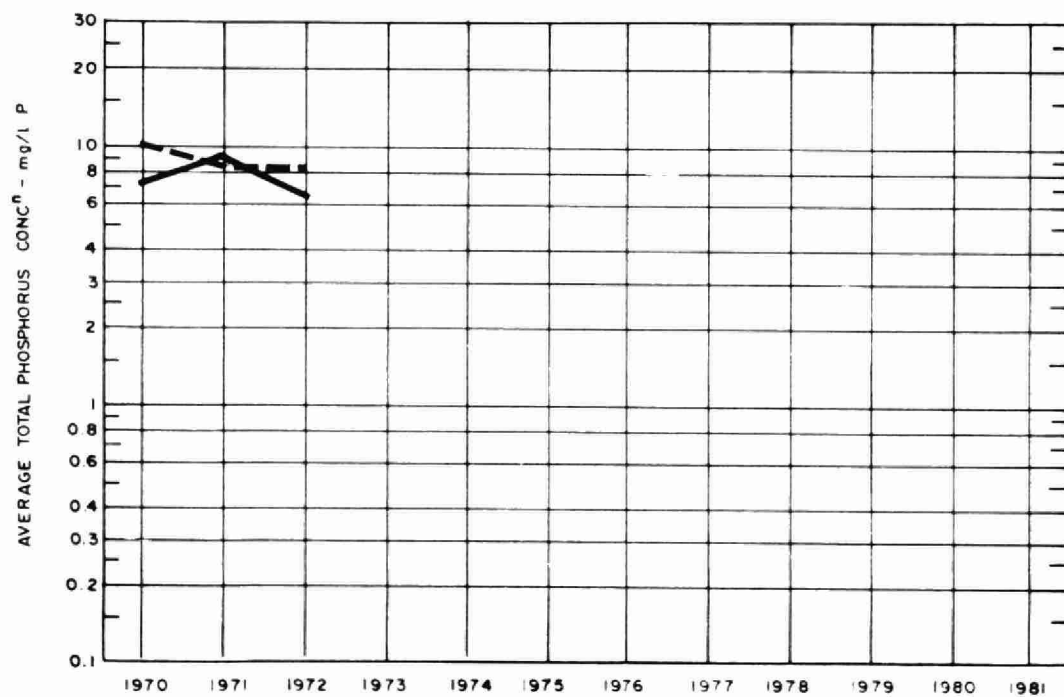
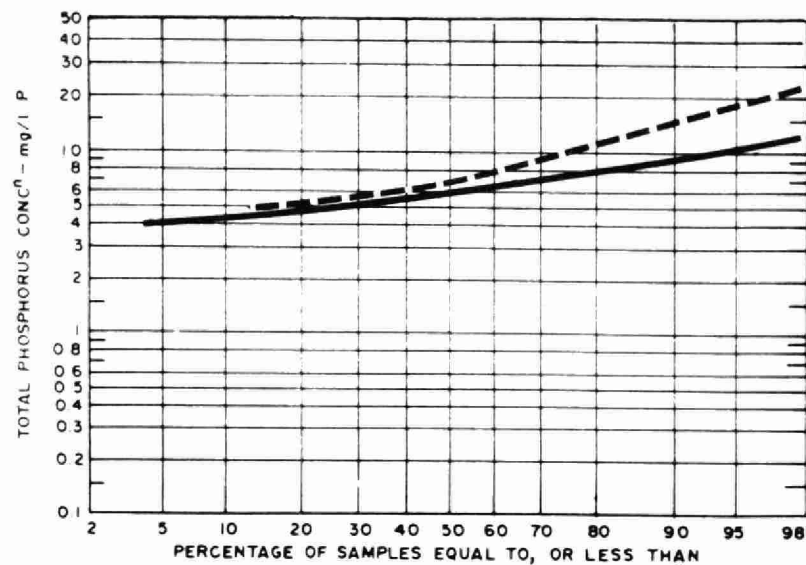


PLANT INFLUENT - - - - -

PLANT EFFLUENT _____



PHOSPHORUS

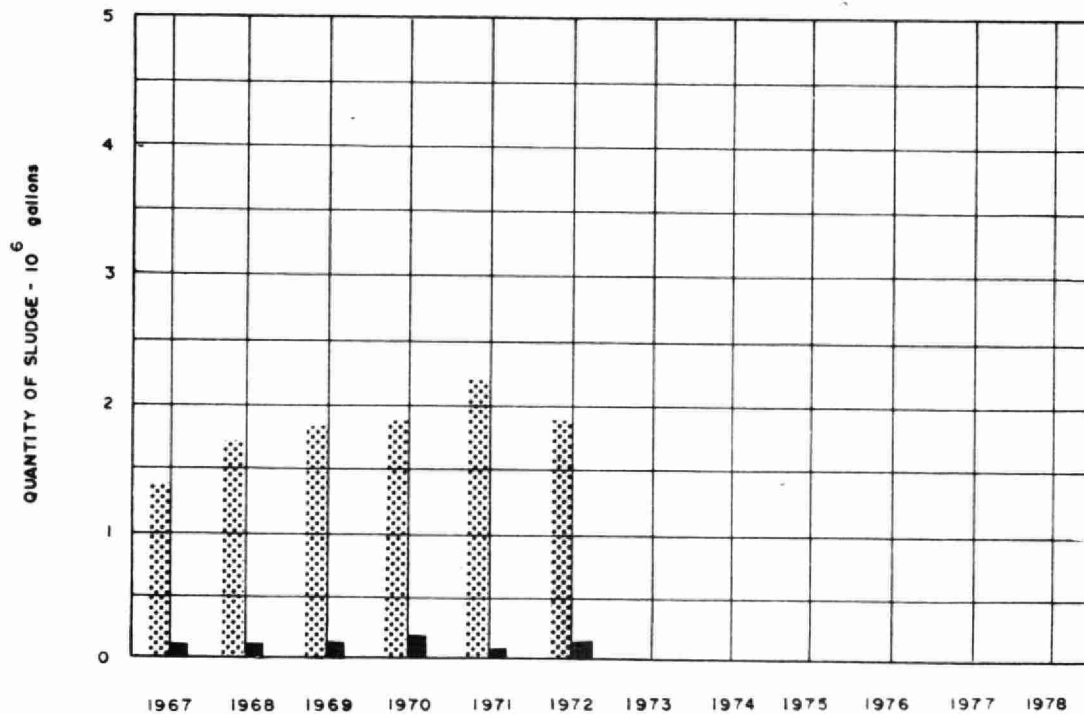
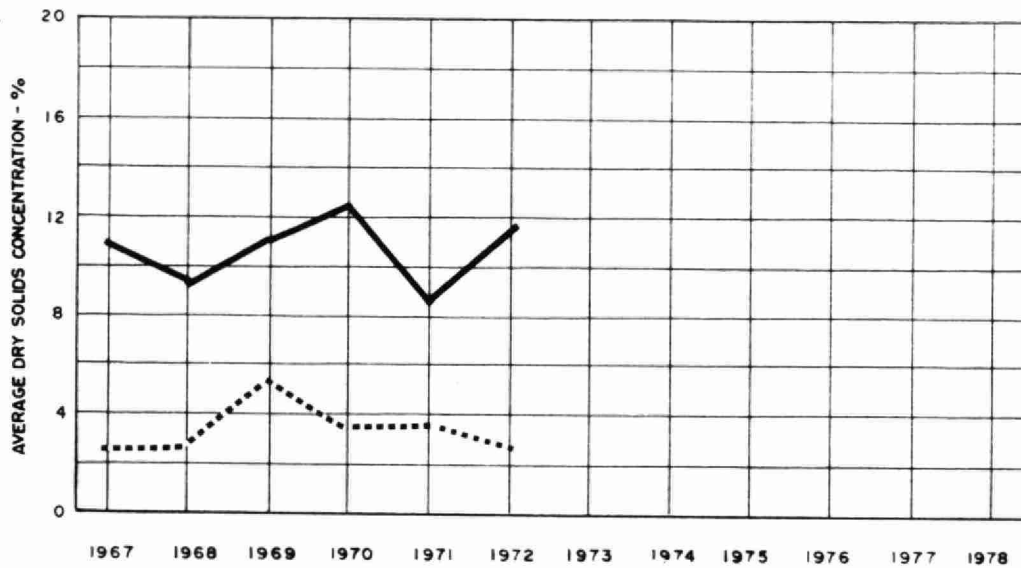


PLANT INFLUENT - - - - -

PLANT EFFLUENT —————

DIGESTION

RAW SLUDGE
DIGESTED SLUDGE ———



RAW SLUDGE TO DIGESTER
DIGESTED SLUDGE REMOVED ———

TREATMENT DATA

MONTH	GRIT	CHLORINATION		SLUDGE DIGESTION and DISPOSAL							
	QUANTITY REMOVED cubic feet	CHLORINE USED 10 ³ pounds	AVERAGE DOSAGE mg/l	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT	SLUDGE HAULED cubic yards
				QUANTITY 10 ³ gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	QUANTITY REMOVED 10 ³ gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	TOTAL SOLIDS %	
JAN	70	2.0	2.6	202	2.8			11.9		.9	116 d
FEB		1.9	2.5	184							
MAR		1.8	1.9	199							
APR		1.8	1.6	195							
MAY		1.8	2.1	198							
JUNE	64	1.7	2.1	192			19.4				34 d
JULY		1.8	2.5	199							
AUG		1.9	2.6	201			5.7	4.1			
SEPT	50	1.6	2.7	194							558 r 336 d
OCT		1.7	2.0	98			56.6				
NOV		1.8	1.9								
DEC		1.9	2.0	92							236 r
TOTAL	184	21.7	—	1954	—	—	81.7	—	—	—	486 d 1589 r
AVG.	.2 cubic feet/mil gal	1.8	2.2	163	2.8		6.8	8.0		.9	41 d 132 r

d = digested sludge hauled

r = raw sludge hauled

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